

40G PIN/Preamplifier Receiver FRM5L442BZ

FEATURES

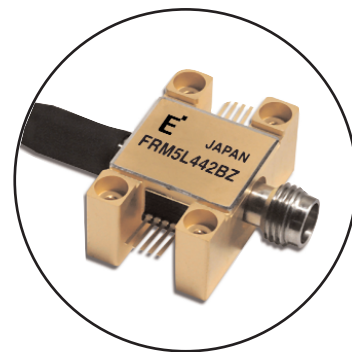
- Integrated Design optimizes Performance at High Bit Rates up to 40Gb/s
- Equivalent Input Noise Current: $30\text{pA}/\sqrt{\text{Hz}}$ (max.)
- Optical Return Loss (ORL): 27dB (min.)
- Package: V-Connector for Electrical Output Interface
- Simplifies Receiver Circuit Design

APPLICATIONS

This PIN with HEMT IC preamplifier is intended to function as an optical receiver for SONET, SDH, DWDM and other optical fiber systems operating at 40Gb/s. The typical transimpedance (Z_t) value of 150Ω optimizes the total bandwidth for 40Gb/s applications.

DESCRIPTION

The FRM5L442BZ incorporates a high bandwidth InGaAs PIN photo diode, a HEMT IC amplifier in a hermetically sealed, single-ended, V-Connector type package. The PIN is processed with modern MOVPE techniques resulting in reliable performance over a wide range of operating conditions. The lens coupling system and the single mode fiber are assembled using Nd YAG welding.



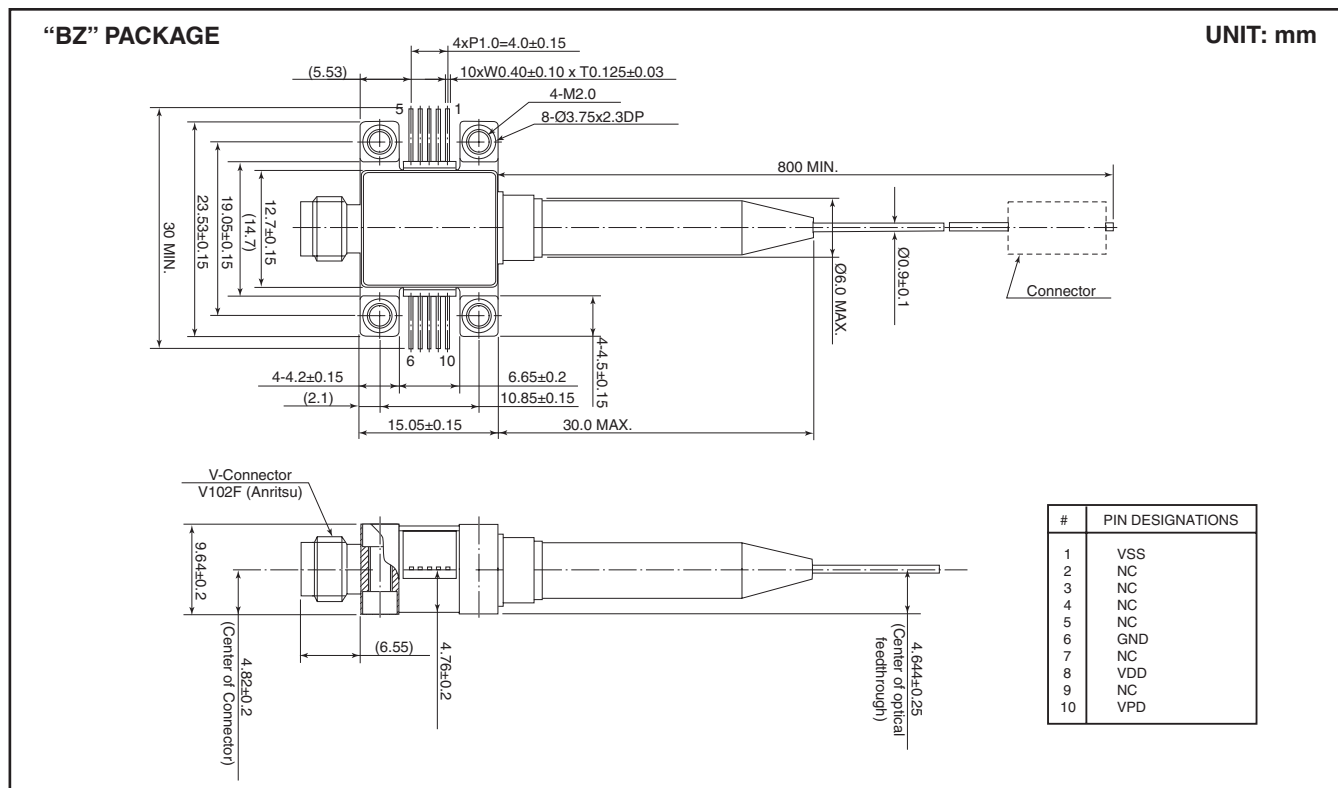
ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$, Unless otherwise specified)

Parameter	Symbol	Condition	Limits		Unit
			Min.	Max.	
Storage Temperature	T_{stg}		-40	85	$^\circ\text{C}$
Operating Case Temperature	T_c		0	70	$^\circ\text{C}$
PIN Bias Voltage	VR		-	5	V
PIN Bias Current	IR	VR<5V	0	3	mW
CW Optical Power	Pmax	CW, VR<5V	-	6	dBm

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_C=0\sim70^{\circ}\text{C}$, $\lambda=1550\text{nm}$, $V_R=2.85\text{V}$ to 3.15V , $V_{SS}=-1.9\text{V}$ to -2.1V , $V_{DD}=6.65\text{V}$ to 7.35V , unless otherwise specified)

Parameter	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
PIN Responsivity	R	$\lambda=1550\text{nm}$, $T_C=25^{\circ}\text{C}$	0.6	0.7	-	A/W
		$\lambda=1550 - 1610\text{nm}$, $T_C=0 \sim 70^{\circ}\text{C}$	0.4	0.6	-	
Responsivity Variation by Polarization Change	PDL	$\text{PDL}=10 \times \log(R_{\text{max}}/R_{\text{min}})$	-	0.1	0.5	dB
PIN Dark Current	I_d		-	-	10	μA
Bandwidth (3dB)	BW	$T_C=25^{\circ}\text{C}$, Reference=average from 1GHz to 10GHz	35	40	-	GHz
		$T_C=0^{\circ}\text{C} \sim 70^{\circ}\text{C}$, Reference=average from 1GHz to 10GHz	30	35	-	
Gain Flatness	GF	$T_C=25^{\circ}\text{C}$, 100MHz - 32GHz	-	-	3	dB
		$T_C=0^{\circ}\text{C} \sim 70^{\circ}\text{C}$, 100MHz - 27GHz	-	-	3	
Group Delay Deviation	GD	1GHz - 20GHz, 10% smoothing	-5	-	5	ps
		1GHz - 40GHz, 10% smoothing	-10	-	10	
Lower Frequency Cut-off	fcl	Reference=100MHz, 3dB down	-	-	100	kHz
Output Voltage Swing for Linear Operation	V_{out}	1dB compression	500	-	-	mVpp
AC Transimpedance Gain	Z_t	Average from 2GHz to 10GHz	100	150	-	Ω
Equivalent Input Noise Current Density	i_n	Average from 100MHz to 19GHz	-	-	30	$\text{pA}/\sqrt{\text{Hz}}$
Output Return Loss	S22	DC - 30GHz	10	-	-	dB
		30GHz - 40GHz	7	-	-	
Optical Return Loss	ORL	$\lambda = 1550\text{nm}$	27	-	-	dB
Power Supply Current	I_{ss}		-	8	30	mA
	I_{dd}		-	80	150	
Output Impedance			-	50	-	Ω

Notes



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